

**STATE WATER RESOURCES CONTROL BOARD
BOARD MEETING SESSION – SAN DIEGO REGIONAL WATER BOARD
SEPTEMBER 17, 2019**

ITEM 5

SUBJECT

CONSIDERATION OF A PROPOSED RESOLUTION APPROVING AN AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN TO INCORPORATE SITE-SPECIFIC WATER EFFECT RATIOS INTO WATER QUALITY OBJECTIVES FOR TOXIC POLLUTANTS AND TOTAL MAXIMUM DAILY LOADS FOR COPPER AND ZINC IN CHOLLAS CREEK

DISCUSSION

On February 8, 2017, the San Diego Regional Water Quality Control Board (San Diego Water Board) adopted [Resolution No. R9-2017-0015](#) to amend the Water Quality Control Plan for the San Diego Basin (Basin Plan) as follows:

1. Update Chapter 3 of the Basin Plan to clarify the application of water effect ratios (WERs) in the California Toxics Rule (CTR) for developing site-specific water quality objectives (WQOs);
2. Update Chapter 3 of the Basin Plan to apply site-specific WERs to dissolved copper and dissolved zinc in Chollas Creek during wet weather; and
3. Update Chapter 7 of the Basin Plan to apply site-specific WER values during wet weather when calculating the dissolved copper and zinc numeric targets and wasteload allocations for the *Total Maximum Daily Loads for Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay* (Chollas Creek Metals TMDLs).

Chollas Creek is an urban coastal stream in southern San Diego County, and a tributary to San Diego Bay. It has two forks, which come together approximately one mile upstream of San Diego Bay. The Chollas Creek watershed encompasses 16,273 acres. Chollas Creek was placed on the Clean Water Act Section 303(d) List of Water Quality Limited Segments in 1996 for metals. Total Maximum Daily Loads (TMDLs) were developed for metals in Chollas Creek to protect the designated beneficial uses of warm freshwater habitat (WARM) and wildlife habitat (WILD) based on dissolved copper, lead, and zinc numeric water quality criteria in the California Toxics Rule (CTR) and the narrative objective for toxicity in the Basin Plan.

When calculating TMDLs, numeric targets are established to ensure that WQOs are met and beneficial uses are protected. The CTR criteria for metals are the basis of the numeric targets. Because metals toxicity is a function of hardness, the CTR criteria for copper, lead, and zinc are expressed as hardness-based equations. These equations may also take into account the bioavailability of the pollutant in the specific water body;

this is quantified as a water effect ratio (WER). The CTR-based numeric targets are shown in Tables 1 and 2.

Table 1. CTR Water Quality Criteria/Numeric Targets for Acute Conditions

Copper	$(\text{WER}) * (0.96) * \{e^{[0.9422 * \ln(\text{hardness}) - 1.700]}\}$
Lead	$(\text{WER}) * \{1.46203 - [0.145712 * \ln(\text{hardness})]\} * \{e^{[1.273 * \ln(\text{hardness}) - 1.460]}\}$
Zinc	$(\text{WER}) * (0.978) * \{e^{[0.8473 * \ln(\text{hardness}) + 0.884]}\}$

Table 2. CTR Water Quality Criteria/Numeric Targets for Chronic Conditions

Copper	$(\text{WER}) * (0.96) * \{e^{[0.8545 * \ln(\text{hardness}) - 1.702]}\}$
Lead	$(\text{WER}) * \{1.46203 - [0.145712 * \ln(\text{hardness})]\} * \{e^{[1.273 * \ln(\text{hardness}) - 4.705]}\}$
Zinc	$(\text{WER}) * (0.986) * \{e^{[0.8473 * \ln(\text{hardness}) + 0.884]}\}$

Not enough data were available to determine pollutant- and site-specific WERs when the TMDLs were developed and therefore, a default WER value of 1.0 was used to calculate TMDLs. The TMDLs are concentration-based and equivalent to 90 percent of the numeric target values generated using the equations in Tables 1 and 2 above. By calculating the TMDLs at 90% of the total loading capacity of Chollas Creek for metals, the TMDLs incorporated an explicit margin of safety equal to 10 percent. The parties within the watershed that are responsible for meeting these TMDLs are Caltrans, the U.S. Navy, municipal stormwater dischargers, industrial stormwater dischargers, construction stormwater dischargers, and landfill stormwater dischargers. The effective date for these TMDLs is October 22, 2008. The TMDL compliance schedule requires that the concentration-based TMDLs not be exceeded by 20 percent starting ten years after the effective date and that they not be exceeded at all starting 20 years after the effective date.

After the TMDLs went into effect, the City of San Diego conducted a study to develop site-specific WERs for copper and zinc in Chollas Creek. A WER for lead was not pursued.¹ In October 2014, the City of San Diego finalized a report that included an evaluation of the study's data and associated recommendations for copper and zinc WER values. These WER values were calculated in accordance with the CTR. The

¹ Dissolved lead testing would not be relevant due to neutral pH conditions and low concentrations of lead detected in Chollas Creek. Lead is very insoluble in water so a lower pH would be required in site water and laboratory water for lead to be present in dissolved phase; lowering pH could have potentially added confounding factors to the WER tests and therefore, lead was not considered.

CTR states that in order to assure that the metals criteria are appropriate for the chemical conditions under which they are applied, the U.S. Environmental Protection Agency (USEPA) provides for adjustment of the criteria. More specifically, the CTR states that the pollutant- and site-specific WERs must be determined as set forth in U.S. EPA's *Interim Guidance on Determination and Use of Water Effect Ratios* or alternatively, other scientifically defensible methods adopted by the State as part of its water quality standards program and approved by U.S. EPA.

Results of the City of San Diego study demonstrate that physicochemical conditions in Chollas Creek make copper and zinc less bioavailable, and therefore less toxic, at a given concentration. Site-specific WER values are 6.998 for copper and 1.711 for zinc, based on the study results. Because the site-specific WER values are greater than the default value of 1.0, the current TMDLs are more stringent than what is necessary to protect aquatic life beneficial uses in Chollas Creek. Site-specific WQOs for Chollas Creek can be developed based on the site-specific WER values, as allowed by the CTR, without compromising protection of aquatic life.

Site-specific WERs produce TMDL calculations that are more representative of actual site conditions than the default WER of 1.0 used in the original TMDLs. Updating these WER values in the TMDL calculations triggers a Basin Plan amendment since the original Chollas Creek Metals TMDLs, once in effect, were incorporated into the Basin Plan.

Stormwater dischargers that may be affected by adopting site-specific WQOs for Chollas Creek are the Region's municipal separate storm sewer system (MS4) copermitees, the United States Navy, construction site dischargers, and industrial facility dischargers. In addition to stormwater discharges, the site-specific WQOs may affect dischargers monitoring contaminated groundwater in the watershed, and dischargers requesting to extract groundwater and discharge it into the creek. As stated in the Chollas Creek Metals TMDL, dischargers are required to monitor for dissolved metals concentrations in Chollas Creek and provide monitoring reports to the San Diego Water Board for the purpose of assessing the effectiveness of management practices implemented to meet the TMDL wasteload allocations, including any updates to the WERs.

POLICY ISSUE

Should the State Water Board approve the amendment to update the Basin Plan as follows?

1. Update Chapter 3 of the Basin Plan to clarify the application of WERs in the CTR for developing site-specific WQOs;
2. Update Chapter 3 of the Basin Plan to apply site-specific WERs to dissolved copper and dissolved zinc in Chollas Creek during wet weather; and

3. Update Chapter 7 of the Basin Plan to apply site-specific WER values during wet weather when calculating the dissolved copper and zinc numeric targets and wasteload allocations for the *Total Maximum Daily Loads for Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay* (Chollas Creek Metals TMDLs).

FISCAL IMPACT

San Diego Water Board and State Water Board staff work associated with or resulting from this action will be addressed with existing and future budgeted resources.

REGIONAL BOARD IMPACT

Yes, approval of this resolution will amend the San Diego Water Board's Basin Plan.

STAFF RECOMMENDATION

Staff recommend that the State Water Board:

1. Approves the amendment to the Basin Plan adopted under San Diego Water Board Resolution No. R9-2017-0015; and
2. Authorizes the Executive Director or designee to submit the amendment adopted under San Diego Water Board Resolution No. R9-2017-0015 as approved, and the administrative record for this action to the Office of Administrative Law and the TMDL to U.S. EPA for review.